

March 2, 2015
Drift Gillnet Fishery in Southern California
Jennifer Stock, Doug Karpa

Ocean Currents: Drift Gillnet Fishery

Jennifer: You're listening to Ocean Currents, a podcast brought to you by NOAA's National Cordell Bank Marine Sanctuary. This radio program was originally broadcasted on KWMR in Point Reyes Station, California. Thanks for listening.

(Music Playing)

Welcome to another edition of Ocean Currents. I'm your host Jennifer Stock. On this show I talk with scientists, educators, explorers, policy makers, ocean enthusiasts, adventures and more all uncovering and learning about the mysterious and vital part of our planet the blue ocean. I bring this show to you monthly on KWMR from NOAA's Cordell Bank National Marine Sanctuary. One of four National Marine Sanctuaries in California, all working to protect unique and biologically diverse ecosystems. And Cordell Bank is located just off shore of the KWMR listening radius, of the Marin/Sonoma Coast, and it's an area that is thriving with ocean life both above and below the surface. California's waters have had a long history of productive and economically beneficial fisheries. That's not to say without some challenges, of course for lots of other wildlife and people. This region does contain some of the most abundant, biodiverse waters around the globe due to the productive oceanography that we experience here on the Eastern Pacific. Fisheries are in constant flux, in terms of managing them on a wide enough scale, biological variability, oceanographic vulnerability, and economics all play a role in how they are managed. The Magnuson-Stevens Fisheries Act, enacted in 1976 set up regional fishery councils, fishery management councils, around the United States to manage fisheries regionally. Here on the West Coast, we have the Pacific Fisheries Management Council along with the State Department of Fish and Wildlife, which manages fisheries in state waters. So, today we are discussing the current status of a specific fishery in California, The Drift Nets. And they've had a long on and off again history in California, and we'll discuss what's happening right now with Doug Karpa, who's the legal program director at Turtle Island Restoration Network. And Doug is joining us by telephone today. Doug you're live on KWMR.

Doug: Great. Well thanks so much for having me on.

Jennifer: It's so great to meet you. So I just actually ran into Doug yesterday in San Francisco at the International Ocean Film Festival, which we'll talk about later in the show. But Doug thank you so much for joining me and I wanted to just talk, if you could just remind us about the Turtle Island Restoration Network and what is it all about. It's based out here in West Marin, but I know it's work is global in nature.

Doug: Yeah. It's actually kind of a federal item I think in West Marin. It's organization has been around, for more than a couple of decades now working on all manner of marine conservation issues, both nationally and

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also internationally. We have pretty active work in Costa Rica, dealing with shark sighting issues and working to establish a national park there. We're also working to protect the Great Barrier Reef in Australia and also increasing some of our efforts in throughout Asia, as well through park and other direct action and that we're engaged in and then of course in the United States we've been really actively engaged in with Fisheries Management and Fisheries Management Councils around the country. And a large part of that effort really has been focused on either trying to clean up or close the most destructive fisheries in the United States. Certainly the United States is in a lot of ways the real leader when it comes to scientific management of fisheries, but that's not to say that we don't have a couple fisheries which are still among the dirtiest in the world. And so since we advocate on behalf of a lot of marine mammals, whales, dolphins, sea lions, so forth, and also of course sea turtles. Part of the reason we are Turtle Island Restoration Network and also our website is seaturtles.org and then also we are very heavily involved in protection of fish and shark, Blue Fin Tuna, Blue Marlin, a whole range of species that are currently under threat.

Jennifer: Fantastic. So one of the issues that you're working on right now is a bit of a current issue, mostly it's based in Southern California. But it's talking about drift nets and I know that California has had drift nets here on and off again since, maybe starting in the 70's, and I was wondering if you could give us a little bit of background. What are drift nets and what do they target? What species do they target and a little bit of the history of them. Where they've been used here in California.

Doug: Yeah, actually I realized in my previous part, I should also mention that many of your listeners may also know some of our work on Coho Salmon, which is another species that we work on here locally in San Geronimo Valley through SPAWN which is also apart of Turtle Island Restoration Network. That's maybe subjected for another show. So the drift gillnets, actually, these have been around for a couple of decades and they were first used in the 70's in California as part of a swordfish fishery. Traditionally, swordfish had been caught by use of harpoons. I do mean traditionally in the sense that it's been going on for thousands of years. The Chumash Indians starting it off and then of course would be the immigration of Europeans, European Americans have kind of followed in that tradition as well. And then in 1976, the use of drift gillnets was legalized and these nets actually are pretty hard to comprehend just how massive they are. There're actually, the largest one pretty much was huge, would if you hung it from the Golden Gate Bridge, they would stretch from one shore to the other and they would hang from the deck all the way to the surface and another 3 feet down into the water. As you can imagine with a net that big, there set loose in the water overnight or for a few days, they catch anything in its path. It is potentially like strip mining or clear cutting the ocean. So, the notion of targeting is a little misguided. Although, the main thing that today gillnet fishermen are trying to catch are still swordfish and then also as swordfish got fished out a little bit, are

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nursing sharks which unfortunately gillnet fisheries in the 1980's managed to completely crash the population. The population only now, slowly, is beginning to recover. And then over, it is partly in response to some of the on going issues with of sea lions, whales, dolphins, sea turtles, sharks, and it's really been subject to a whole series of regulatory actions. Initially within five years they're being introduced, the first action was being taken to move drift gillnet fishing to more than 3 miles off the California Coast because they were taking so many sea lions. And of course by moving off the coast, then dolphins and whales become an issue so there was later action to have the drift nets drift, but 36 feet below the surface, which did eliminate some of the problems with surface dolphins but then it ended up ramping up some of the catch of whales and sea turtles. Also, in addition in 2001 there was a closure put in place from about Central Coast California, north for the protection of Pacific Leatherback Turtles, which are critically endangered species that actually they hatch in Indonesia and then migrate fully across the Pacific. Some of your listeners may remember Crush from *Finding Nemo*, who was riding the East Australian Current across the Pacific, which they actually do is true with the Green Turtles and the same kind of idea with the Leatherbacks. And they show up in up the California Coast on beaches just as an incredibly profuse of jellyfish. That happens because of an incredible thing, our unique oceanography and they run into real trouble here on account of the nets.

Jennifer: So the leatherback conservation area was put in place for because of drift nets? Is that what you are saying? Is that something that brought drift nets out of this area?

Doug: Yeah, that's right. It's an exclusion for drift gillnets, specifically long liners, also are subject to regulations. Long lines are lines that are many kilometers long and they are used in Hawaii, but not in California. Also pretty destructive for much of the same reason. If you leave a whole bunch of gear out there, you don't really know what you're going to catch. Yeah and actually I should point out too, that along the line, I mean we have been talking about what's been going on in California, but actually international agencies have really taken a pretty hard line on drift gillnets. They are banned on the high seas globally by international agreement of resolution at the EON, which the United States is a party of that. There are also prohibited in the Mediterranean and within the United States. The state of Washington closed down its last gillnet fishery in 2001 in response to the destruction of Common Thresher Sharks population. Oregon abandoned it entirely essentially gave it up, stopped issuing permits for it in 2009. The state of Florida actually enacted a Constitutional Amendment banning them in 1994. So there's a long history not just in California of tackling this problem, but globally.

Jennifer: Interesting. So it seems like California is the state, one of the last states perhaps that continues to operate the fishery and it's reduced a bit in terms of numbers of boats, but how come we haven't shifted over to different fishery techniques for targeting Thresher Shark or Swordfish. I

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have other questions about the demand for those still. But how come we haven't shifted away yet with this enormous amount of by-catch. Obviously there's a lot of public dismay about that. But where are we going with that?

Doug: There are probably many different answers to that question. I think probably the most significant answer simply is inertia and resistance, first on the part of the fisherman who invested in gear and they're not particularly keen to transition back, largely for harpoon fishers. Although I will point out that the son of the guy who invented the drift gillnet in California is now a harpoon fisher and has actually abandoned drift gillnet gear, which what does that tell you right. But there's also been you know agencies certainly not to disparage NOAA fisheries, but there has certainly been a lot of I guess I would say support at a regulatory level for the continuation. Essentially on a theory that's like, hey of we just do another couple tweaks maybe it'll all work out. You know, which is perhaps questionable given how many different things have been already tried over the 40 years. And yeah I think those are probably the two main considerations. There's also of course always political issues that particular to fishery makers are from San Diego and Santa Barbara they essentially want to keep the fisherman, fishery around for their local and political consideration. Although, I will point out that the from right around Santa Barbara, the assemblyman have actually called a letter for the end of the drift gillnet fisheries. Actually has our own assemblyman, Marc Levine, as a letter to the Pacific Fisheries Management Council asking for this. So it's not like there's anywhere near a political consensus that this should continue. Change just comes slowly.

Jennifer: So since change does come so slowly and this has obviously been going on for a while, tell us a little bit more about this assembly bill and how does this get presented and move forward and how can people learn more about it.

Doug: Right. Well actually it was. The action I was talking about is a letter from various legislators to the Pacific Fisheries Management Council. I should mention that really in the next 10 days is a pretty critical period for people who want to actually take action on this because the Pacific Fisheries Management Council is in fact meeting on, I believe, it's March 11th and 12th to discuss what actions they are going to take with respect to the management of this fishery and if any individuals want to comment to the council directly they can send those comments today by email. That is the address for that is PFMC, which is Pacific Fisheries Management Council .NOAA oh sorry .comment@NOAA.gov, pfmc.comment@NOAA.gov, to send those off or you can visit our website seaturtles.org, for the petition that we are getting together to submit through the council saying, you know what people in California do care about marine life and you know we love our seafood, it is unequivocal, but we want it to be done in a sustainable way and fisheries with this incredibly high level of by-catch is really not the way to go about doing it and so that's kind of the main

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action right now to see what actions that those regulators will take. I understand that there is appetite for if that does not work for the California legislature to step in. There was actually a bill that was before the legislature last session that was pretty much called for an end to the fishery to stop which ended up dying in committee. And there's sort of ongoing negotiations about bringing that forward with more of a concrete plan for how one transitions away, essentially to alternate gear. You know we've mentioned harpoon gear. There's also an experimental gear that's being looked at using buoys, that sort of uses suspended hooks, which from the initial results may actually be lower by-catch, considerably lower by-catch and if those results hold up in practice that could be a very positive development. That is if the swordfish fishery goes with a different gear to be using in the future.

Jennifer: Interesting. So I also understand swordfish in general have, their sizes have gotten smaller over time and in terms of the population itself, is it still a fishery that's really viable or does it need to be cut back on in terms of if we catch too many we won't have any around. It's just seems like things are shifting so rapidly right now, it's hard to believe that we are still allowing practices that catch so much more than the targeted species.

Doug: That, yeah that's right. My understanding is that, in fact, yes swordfish have been getting smaller. Largely because that happens when essentially you are catching fish before they have a chance to really grow up and I think you raise kind of a good point which is this: it's not just swordfish. There's actually was just a recent study, a very interesting one, even probably maybe some of you may have seen this in the New York Times. That you know there's a tradition of fisherman coming back off the coast, you know recreational fishers, who hold up their catches and then take a photograph and we have this great record of the size of fish that people have been catching over that last century and looking at those, if you go back to say the 30's and 40's you see fishermen with fish bigger than they are. I mean really, really big fish, including swordfish. And overtime as you look at the photos from the 50's and 60's and 70's, 80's, and 90's until today; today now fishermen are coming back and there are very proud of these fish that they catch that they can hold in front of them with two hands. Very, very, very different and so this phenomenon that as we fish and cut into these populations, what's left are kind of are kind of the runts and the one that just really haven't had the time to grow up to be a full size fish. Fish do grow for a very, very long time and also in the case of swordfish the one of the other concerns is the demand for swordfish has been declining in the U.S. impart out of consideration that a lot of the fisheries are globally are not sustainable and as seen by the size they are mostly are top predators. They tend to if they eat their prey fish that have any kind of poisons in them. Then, in particularly mercury then that's an issue. They concentrate that in their own flesh which is why when you go into super markets you see warnings about tuna, and shark, and swordfish the big predators, that are dangerous to eat too much of because can get mercury poisoning and you know pregnant women

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should avoid eating this fish and that's again that's ought to tell you what maybe so healthy for pregnant women isn't necessarily so healthy for the rest of us either. And that has also cut into the demand for swordfish as well. And then moving on questions of thresher shark which is the other official target. Thresher shark are have been under a tremendous pressure globally. Populations are down by 90%. I like to sort of give people an analogy, if you reduce the U.S. population by 90% you would have everybody in the United States disappear except for the people living in Illinois and Iowa; all the rest of us, gone. That's what 90% looks like. And in the case of thresher sharks, they recently been listed for international protection under the convention of migratory species and which limits the trade in thresher shark and again they have also been listed by International Union for the conservation of nature. Which is the largest scientific organization. Declaring that you know what this population is declining and on its way to extinction if nothing is done. It's actually at the same level of population status as it's the same as the cheetah. Which is some people know is in pretty dire condition and the polar bear which is also suffering decline as well as the number of other species. So in the case of the thresher shark that's not by-catch, but they are targeting thresher shark. But it's the fishery that's targeting a species that's going extinct because it's being targeted. Again that's something that's the regulatory agencies need to take a very long hard look at whether or not there's something hopeful initiative towards the by-catches.

Jennifer: For those tuning in, I am talking with Doug Karpa from Sea Turtle Restoration Network and we're discussing drift net fisheries in California and the horrendous by-catch and the challenges that this fishery has been taking on and the management agencies as well may be discussing in the coming days. Going back to thresher sharks are they a species managed by the state of the state or the Pacific Fisheries Management Council?

Doug: That's a good question and actually I'm not entirely sure of how that interplay on thresher shark in particular work. My understanding, well certainly the Pacific Fisheries Management Council is looking at regulating that catch and putting in performance objectives to essentially, let's keep an eye on this. At this current upcoming meeting whether the Fish and Game Commission or Department of Fish and Wildlife at a state level are also regulating that. I'm less familiar with what the state authorities are up to about thresher shark, but I'd be happy to get back to you on that.

Jennifer: Oh, that's okay I was just curious. You know coming, I'm just thinking about these remaining boats that are still doing this and this practice and how is it documented in terms of the by-catch. I just can't imagine coming back to the dock with all of this stuff. I mean how do you bring back whales and dolphins and stuff. I mean it's happening not too far offshore and I'm sure this is observed from other boats around. Do they have

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observers, like mandatory observers that are on board if they had a permit to do this to document this by-catch?

Doug: Absolutely. Actually it's the NOAA Observer Program. That actually sends people out onto boats to monitor what's going on and that is what I referred earlier to the notion that U.S. fisheries regulation has lots recommended. This is one of the things that the United States does that's extremely important to get that data. To have somebody there on the boat and keep track of what's be pulled in and actually one of the things that environmental activists and scientists, I think often are asking Congress for is to fully fund the observer program because I think there's a lot of interest on the part of regulators to have more observers, but it costs money to do. Not a lot. I think the budget for the, if I remember, I think it's all of the California, the entire budget was under one million dollars. So not a global level a whole lot. And when it come to collecting that critical data that we need, for protecting our oceans and know exactly whether or not we are doing things sustainably or not. With our observers, you know, we really have know idea.

Jennifer: Sounds like a horrible job. I mean that sounds like a horrible job.

Doug: I'm not sure actually. I know that a lot of those boats are pretty cramped and it can often be hard to be out there for days at a time just monitoring what's going on but on the other hand I think a lot of people really like being out at sea.

Jennifer: I'm just thinking and witnessing death like that. I just.

Doug: Oh.

Jennifer: I don't know if I could handle that.

Doug: Yeah and actually you now one of the other things too, it's pretty dangerous work actually I don't know if people know the thing about West Marin in particular that the that fisherman and ranchers and loggers all of those are getting more dangerous jobs than being a policeman. I was looking that up the other day. Loggers are have the most dangerous occupation in the U.S.. Fisherman is number two. Construction is another one, in the top ten. Yeah we have quite the quite the assortment of daredevils that are in the professional world out here.

Jennifer: Interesting, yeah.

Doug: I'm not sure if observers are quite at risk in the same way, but you it's a lot of moving machinery and not entirely safe.

Jennifer: Yeah big seas too sometimes.

Doug: Yeah.

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- Jennifer: So it really, it almost sounds like really the trend that's happened there's been a lot of global closures of this fishery don't allow it anymore it's decreased so much in California. It does seem like it's just a matter of time before it's completely phased out. And again this is a letter that you are putting forward to the Pacific Fisheries Management Council in the next two weeks to encourage them to phase out this fishery.
- Doug: That's right. We actually are putting in a letter ourselves to kind of look at some of the more kind of technical details of what The Council is up proposing to do in terms of, for example putting in hard caps. Looking at hey if we catch more than one turtle in a year than the fishery is closed for the year. Individuals who just simply want to express the view of we need to reign in on unsustainable fisheries. You know cause I mentioned before in, but the general consensus is that the fishery itself is has been declining for a long time as you've mentioned in part because it's not really the most economical either. The fishery makes up, I think, 0.5, half of one percent of this total revenues of the California fishing industry. It's really, really quite small and people don't tend to stay in it that long and the fishermen are older than average and there's a lot of talk among them. You know enough already we get it we're ready to move on. So in may entirely be that for economic reasons and kind of social reasons and demographic reasons that it will disappear on it's own. But I think the concern is that it may not and it may just kind of linger on and continuing to take whales and dolphins for a long period of time. Also to give a kind of test to this scale is that the by-catch that the as I sort of mentioned that this fishery is less than 1% of the revenues. So it's in total so it establishes plenty are really active, but the small, small group. But that small group caught 87% of all whales and dolphins caught by any fisherman in California, Oregon, Washington, and Alaska put together.
- Jennifer: Wow. That's huge.
- Doug: Yeah, it's just this one. I mean you can see seven fisherman here in California you know people going after dungeness crab. You've got cod and halibut fisheries up in Alaska and cable fish. All sorts of things. If you put all of those boats together and they don't even make up one-twentieth of the amount of by-catch of whales and dolphins that this small fishery does. So it's kind of a little hanging fruit. If you want to protect marine mammals this is one very easy thing to do.
- Jennifer: Gosh. We really hope to see that there's progress on this this year. I appreciate the update on this. How many boats are active in terms of the harpoon fishery? That seems like a much more sustainable in the sense of no by-catch fishery. How many boats are actually active at harpoon fishing?
- Doug: Not a lot. I think it's actually you know drawing a blank on the actual number but the total by-catch is under 100 metric tons. I think if I am remembering right they order 40 metric tons per year. If you compare it to the drift gillnet fisheries bringing in 350 metric tons of swordfish a year

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and then back in the hay day before the drift gillnet fishery even came into being over the period from 1950 to 1980 the harpoon fishery was actually bringing in 400 metric tons. So the old harpoon fishery was more than meeting the supply that drift gillnetters today are meeting. And so the harpoon fishery is pretty small. I think largely because it's a little bit crowded out by the drift gillnet fishery and so there's every reason to expect that people getting out of the drift gillnet fishery, like Kirk Mansur, the son of the inventor will get their harpooning. Now it's a more intensive effort there will often involve several boats sharing an airplane above the water that will go look for the swordfish, but you know the thing about it is as you say, if you are harpooning a swordfish it's pretty hard to mistake that for a sperm whale or a sea turtle.

Jennifer: Yeah.

Doug: You just simply don't have those by-catch issues.

Jennifer: Interesting. Folks tuning in, this is KWMR Point Reyes Station Bolinas and San Geronimo Valley and I'm talking with Doug Karpa from Sea Turtle Restoration Network and we've been talking quite a bit here about swordfish fishery with one of the dirtiest fisheries in the United States. With 63% of all animals pot are discarded and almost 550 marine mammals have been entangled and killed in these nets in the last 5 years, looking here on your fact sheet from Sea Turtle Restoration Network. Well I wanted to transition here a little bit to another topic that relates as well to sharks and I'm not completely up to date on the latest, but I think you might be in terms of shark finning and a ban in California for maybe it's landing shark fins. And wondering if you could just give us an update of what's happening with that. This is a practice where sharks are caught and they just take the fin and throw the rest of the shark back in the ocean and sell the fins and what's happening with shark finning here. I guess maybe even globally, but also here in California the local actions that we've been taking.

Doug: Yeah. So actually to start with I think the global issue of course is that almost the entire demand for shark fins is in Asia, mostly in China. Although there are also unfortunately there's growing demand in countries like Malaysia, Vietnam, Cambodia, Thailand, Indonesia, and it's a you know as you mentioned it's an incredibly wasteful practice and it's having a pretty significant impact on global shark populations because where there are estimates to something like 3.9 million hammerhead shark fins coming into China, I believe per year. Which is a staggering number given that there are some many hammerhead sharks in the world. And so one of the of course there's sort of with any of these issues one of the things to do is to stop the fishing, but also to target transports. From for example a lot of these fins come from Central America or South America and then they get shipped to China and a lot of that shipment goes by air by way of California and so one of the efforts that's been undertaken is to go after the shipments. For example, airlines and carriers decide by just saying we are not going to ship anymore shark fins and so

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we've had a fair number of success in in having airlines, such as Singapore Airline, Cathay Pacific, Korean Air, some of the Philippine airlines, Virgin has signed on a pledge to no longer ship shark fins. To date no United States airline has signed off which is something we are no working on on a couple of airlines, America and United in particular, going forward. And so the California action is pretty critical because one is as you say has to do with landing. My understanding is that that ban also relates to possession and shipment as well and that ban was challenged in court and upheld last year. I'm not sure if it can get appealed, but my I was looking at this earlier and wasn't able to find notice that it has any new stories that it had been appealed which that the shark ban in California is in place. That is one of nine states that have banned shark fins currently the Texas state legislature, which is another really big transit spot. Fins coming in and out of Houston on their way to Asia from Latin America is taking up a bill even as we speak and if anybody wants to write to the California state legislature and to the governor please feel free to do so. If it will encourage you to take action on that one. And then there's also action in Florida to also to ban and I believe Pennsylvania may also be working on a ban. So it's sort of happening state by state. There's also the at the federal level. The some of the shark species that are hunted are so depopulated, they are now getting to the point where they are endangered enough that they can make it onto endangered species list onto the U.S. federal endangered species act. Currently the first, I think it was the first shark the scalloped hammerhead in the Eastern Pacific, which is one of the ones that is taken and if you've heard of the expression getting hammered off the Pacific Coast and Central America and Colombia and so that actually now would be an act espionage to bring those into the United States and them into Asia which really is regulators a pretty significant criminal foot to go after those shipments with actually that NOAA enforces. Have really been keeping a good look at this.

Jennifer: So the ban exactly, what exactly is the ban? It does not allow the shark fins to be transported here. Does it mean they cannot be sold here as well?

Doug: I believe that's right.

Jennifer: I mean you can't sell something that you can't receive, right?

Doug: Ideally. It's about possession as well. Cause I know one of the, the challenge actually to the ban came from I believe some Chinese restaurant owners. And one of the claims was this is discriminatory against Chinese Americans because that's the large component of the demand and you know for cultural reasons and historical reasons and I suspect, if my understanding is right of course that is the challenge that they wouldn't be able to bring if there were not in fact the ban on possession and presumably surviving shark fins as well.

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Jennifer: Well it's exciting to see California take such a strong stand and it's also exciting to hear other states as well and that just shows a little bit more of the progression we're taking to slowly making changes to help protect these species. It's kind of, it's just boggling of the mind of how these populations of sharks are just hanging in there really and we don't really know for sure because we can't see every single one of them, but there's just so many pressures on these animals between by-catch and shark finning and many other things. It just seems like we should do all we can, oh yeah, plastic to help protect them especially with so much rapid change happening in the ocean. You know I'm curious I don't know a lot about swordfish, their biology and their habitat. But I know this past year we've had this rather large warm water mass move into our area and to the point that I've heard that brown boobies, a type of sea bird, have started setting up nests on the Farallon Islands. Which is a sure sign of major change.

Doug: Yeah.

Jennifer: A species that's typically down in Baja. I'm curious as if these fish, you think, would start moving up in this region? If they, would they follow warm water? Do you know much about the biology of them?

Doug: Of the swordfish?

Jennifer: Yeah.

Doug: They actually are already off the coast. This is, I believe, part of their natural range of the swordfish. Which is part of the reason that the drift gillnet fishery used to come up here to fish for them and then of course take a lot of sea turtles as well. They are, I believe, they're pretty they're highly migratory species. So they range, I mean envision them as part of the like tunas and marlins, big, strong, powerful swimmers that travel for thousands of miles through the ocean. I believe that that's the sort of thing that they go in for and then which means as the water conditions change you it's seems like a pretty good guess that they will respond to that. Interestingly, enough I was actually reading a story about a scientific article recently that actually documented that not only do the ranges of these species change as the result of changes in temperature and of course climate change, but also the impact of fishing are so large that actual biomass gaps will open up in the ocean because such large numbers of these top predators are removed that other smaller animals that aren't their traditional prey, like skates and rays and so forth end up moving into space that's vacated when all of these top predators are removed. And then of course one of the interesting things that caught my eye on the East Coast, the phenomenon has been pretty well demonstrated. But when skates move in one of the things that they like to eat are shellfish and there are scallop fisheries up Maryland, Delaware, New Jersey, that have really taken a hit because the swordfish and other sharks and other predators are removed by the fisheries that allows skates to come in and eat the shellfish.

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Jennifer: Interesting.

Doug: And so yeah it's one of these things so as we look at the ocean as you say there's a lot of change going on and a lot of the things that we're doing are having a pretty significant impact. I know also one of the other things that's and actually Jennie you many know more about this than I do, a significant concern has to do with simple starvation and whether there are significant destruction to plankton and food webs such that I think there's larger numbers of there's been some significant seabird die offs and seals and sea lions coming, actually at the Marine Mammal Center. My understanding is that there's been a lot of starved animals showing up as well. I can imagine that if it's affecting those populations it's probably affecting swordfish as well.

Jennifer: Yeah. That has this warm water that we've received starting last July has really shifted things quite a bit and we don't know how long it will last, if this is a short term thing. Sure hope upwelling season will start this year and hopefully bring some cold water, but there were seabird die offs in the Fall. We heard from Russ Bradley out at the Farallon Islands about Cassin's auklets. Not enough food in the water and, yeah, right now sea lions are really taking a hit too with not a lot of food in the water. So hopefully this is all very variably. The only constant in the universe is change is my new motto when talking about the ocean. I'm just hoping that there's also change for the better as well and mainly due to a lot of the work of people like you helping work on the legal issues behind the scenes that most of just don't know what's going on. There's a lot going on in terms of working to change the industry to reduce challenges on these fisheries. So thank you for that. We have just a couple minutes left and I wanna end the show with some other announcements, but I want to just give you a chance to share any last perspectives or opportunities for people to get involved with the work that seaturtles.org is doing. I noticed that your website's really been renovated. I don't know how far back that is, but it looks really good and it's very clear and easy to see the programs that you're all working on, but any last comments about getting involved with these actions and consumer choices we should make.

Doug: You know I think actually consumer choices is an important point because none of these protections can happen without public support and you know particularly having grown up in Marin County and knowing that you know the people of this county really as a forefront thinking about these issues. Thinking about the impacts of the food we eat and how we raise it, how we fish for it and so I think that just encourage listeners to one speak up and when you hear these issues going on just send off a letter to the decision makers because it lets them know that people care and people want to see that done and ultimately all of agencies are answerable to us as you know the voting public. And then of course going to seaturtles.org you can see a pretty broad range of things that we're up to between we're going to be putting together a petition on shark fin shipments. The drift gillnet fishery is going on. We're looking at Hawaii long lines impacts. It

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turns out that the state of Louisiana, not surprisingly, has a law in the book prohibiting state employees from enforcing federal endangered species law. Which means that the gulf shrimp fishery is having a tremendous impact of sea turtles. So that's a place you can take action. And then frankly just being aware of the impact of what you eat. A lot of these, particularly here, looking at swordfish and tuna those are two of the big ones that you order a steak of swordfish and you know it might as well be that the waiter brings to you a plate of sperm whale and a plate of sea turtle and a plate of longfin mako shark and a plate of sea lion and a plate of like all these other things because you know as you mentioned two-thirds of the fish that are caught here are animals that are caught are just thrown overboard again. Which makes it in you know the top 20% of the dirtiest fisheries on the planet and so you know as we transition as consumers the things that have less by-catch and if we're aware the impact of what we're doing, I think we'll get there, we'll all end up and I appreciate that fact of the work we're doing, but I know it needs stuff like environmental advocates to by themselves because none of us could do it without the support of the public for sure.

Jennifer: Fantastic. That's a great point to make to end up there Doug. So I want to just say thank you again for joining us today and hopefully we'll run into you again real soon.

Doug: Yeah. Well thanks so much for having me and you know taking the time to bring light to this.

Jennifer: You're welcome. Thanks again.

Jennifer: Alright. I just want to recap the website seaturtles.org and that is our local West Marin Sea Turtle Restoration Network working on a number of issues not just sea turtles, but working on a number of issues to help protect some of the wildlife in our waters, as well as global waters. And you can learn about the way they work on these issues online a seaturtles.org and if you want you can sign action letters from their website too. He also mentioned regarding the local the drift net fishery in Southern California and the letter they're working to put towards the Pacific Fishery Management Council and you can write directly to the console at pfmc.comments@NOAA.gov. You can also go to the Pacific Fisheries Management Council website to learn more about these meetings and how to comment and get involved there as well. But indeed all working towards making things a little more sustainable that we would love to get more public support and input and awareness about these really challenging issues. I'm gonna take just a short break and come back in a few minutes with a couple announcements. Thanks for staying with us on Ocean Currents.

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Jennifer: And I'm back this is Jennifer. Whoops a frog has just jumped into my throat. We have been talking about some pretty challenging topics for the

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majority of this show. Some of the dirty stuff behind the scenes that we don't necessarily see on the forefront regarding challenging fishery, the drift net fishery happening in Southern California and I just want to highlight a couple of really fun events coming up, regarding the ocean to celebrate the good things that we have and encouraging people to stay engaged and helping to protect them. First of all this is the last day of the San Francisco International Ocean Film Festival. I spent quite a bit of time down there in the last few days and it's just been so inspiring to be amongst so many ocean advocates and film maker bringing light to many issues in our global ocean and tonight is the last program starting at 7p.m.. You can make if you're listening in the near Bay Area. You can get down there by tonight and the program has five films and one of them is a beautiful close up encounter with humpback whales underwater. It must be filmed outside of the United States just based on the photo, probably the Dominican Republic. But really bringing some breath taking scenes of humpback whales underwater and how they bring together and how they interact with their young. The amazing life of sand, looking at the history of sand and geology and shells and how sand is made. Beautiful, beautiful cinematography. Six months at sea in the Merchant Marine, what's it like to be on one of those giant container ships that crosses the ocean. A first hand look at work at sea. I've always, I'm actually really curious to see that and a couple other films. So seven o'clock tonight, San Francisco International Ocean Film Festival wraps up. You can go to oceanfilmfest.org if you'd like to learn more. There's also, you can see the whole program online there. What a great program, it's been fun to be involved with it. Speaking of which the student film competition screening was yesterday and I was very proud that some of our students actually from here in West Marin actually placed in the top three from West Marin School for the film called Trashzilla. Another event coming up in March, this is also in San Francisco with the Gulf of the Farallones National Marine Sanctuary is a Sea Slug Swara. The Gulf of the Farallones has been putting on these swara events for a few years now and having a really good time with people that come. They have a very interdisciplinary approach to sharing some of the wonders of the sea through art and sciences, sometimes music and this event is at the Renal Museum, March 21st and it's 7 to 10 p.m. and it's a science and art celebration of elegant slugs of the sea. Our beautiful nudibranchs and Dr. Rebecca Johnson of the California Academy of Sciences will be there to talk about some of the astounding biology that we know about these slugs and some of the sneaky ways that they adapt and conceal defenses from their prey. Isn't that amazing, pretty awesome. So it's a sea slug reception there's art, music. There'll be print making. You can make your own sea slug print and there's complimentary beverages included there are tickets. You do need to purchase tickets and to get more information you can go to farallones.org/events or call Sarah Hiensalmen at (415)561-6622 extension 267, Sea Slug Swara. Sounds like a lot of fun. And we are just about out of time here, but one thing that you can do locally here, we're a part of a network here the National Marine Sanctuaries with Point Blue Conservation Science, working on ways to help protect whales in this

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region. Not just from the fishing by-catch we see, to not have that as a big issue here, but through shipping and there's a website whaleaware.org. That really has all things about whales. I know that some people really just love whales and this is a great website because it has some much information about when to see them, where to see them, what are some of the current issues about protecting them and how to get involved and learn more about them. So whaleaware.org, there's a link there for an app that's available for people that might be at whale watching either on a boat or out at the coast called whale alert and that's free and you can be involved and helping collect data of where these whales are so we can get more information to work with the industry to help slow down these ships. That's the long term goal. Whaleaware.org. Well I'm just about out of time here thanks so much for tuning in to Ocean Currents. Ocean Currents is always the first Monday of every month and you can catch past episodes by following my pod cast in iTunes you can just search for Ocean Currents or you can go to our website cordellbank.NOAA.gov and listen to all the past shows there as well. Thanks so much again for tuning in and we'll be back next month. Thanks for tuning into KWMR.

(Music Playing)